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Texas Public Safety Broadband Program

Lessons Learned from Early Adopters

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Overcoming Congestion

Overcoming Congestion

Texas SMLA

- SMLA signed in August 2014
- Includes 5 Key Learning Conditions:
  1. Core Transition
  2. Data Analytics
  3. Special Events
  4. Extended Mode
  5. Training

Informal KLCs

- ICAM
- Priority & Preemption
- Local Control

Texas SMLA

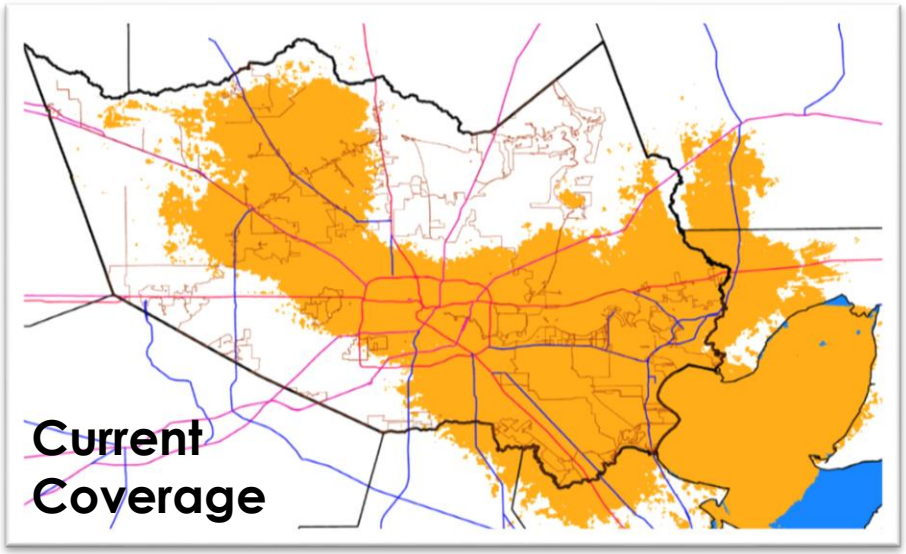
- Deployable eNodeB
- Retain site at College Station/Disaster City
- Spectrum for Harris County build-out

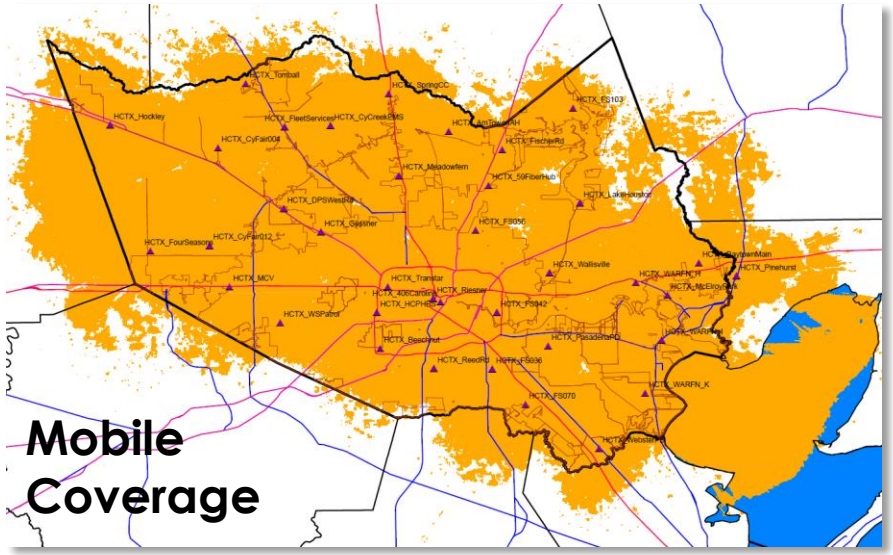
HARRIS COUNTY
TEXAS
Harris County LTE
Public Safety Technology Services

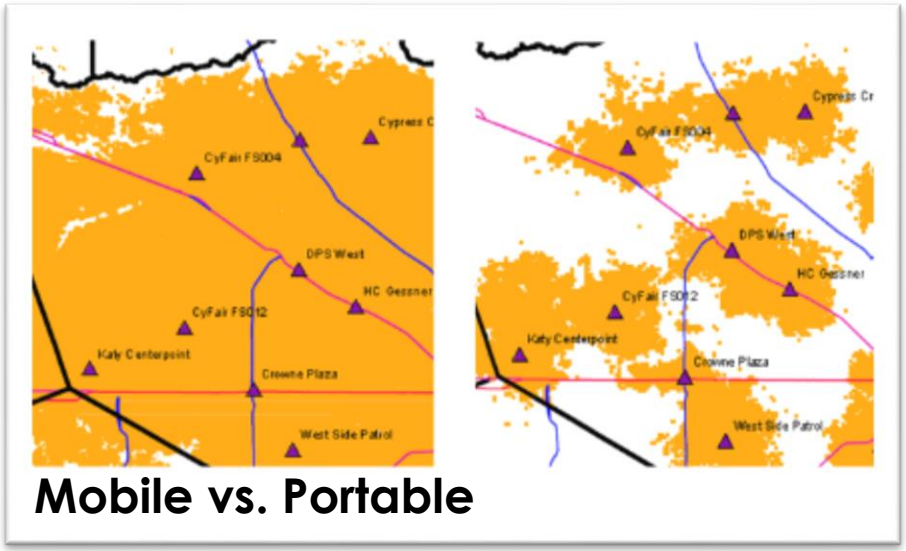
Harris County

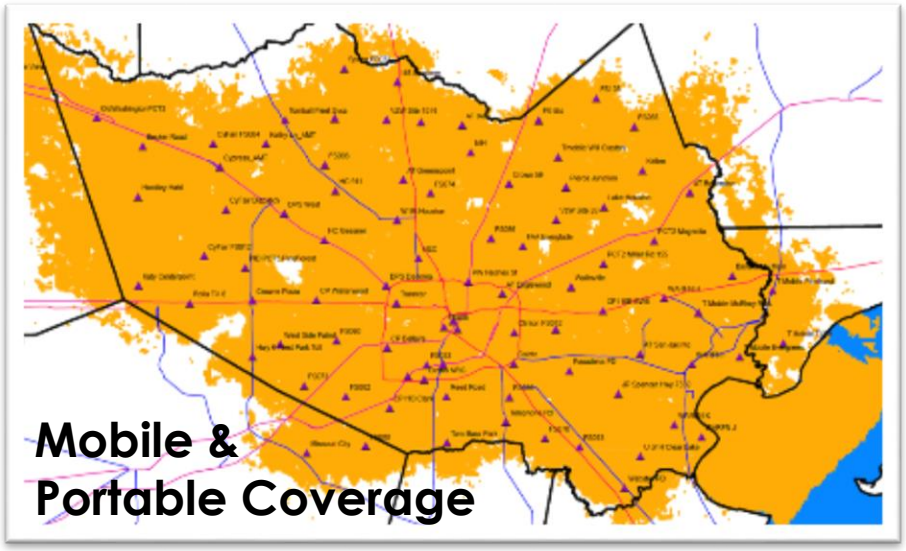
- Current Status
  - 18 Sites in Harris County service area
  - 1 Site in Brazos County (Extended range test site)
  - 1 Mobile Unit

Coverage/Build-Out Strategy









Harris County

- Move Forward Strategy
  - Data First
  - Mobile Coverage First (37 sites – Phase 1)
  - Funded for completion
  - Portable Coverage to follow (+60 sites)
  - Developing Voice(VoLTE) Strategy

Harris County: Lessons Learned

- Planning is critical
  - Business Model
  - Funding & Operating costs
  - Deployment
  - Location, Location, Location
- It's a business!
- Education and Outreach

Texas (Harris Co.) Highlights

- KLCs:
  - Data Analytics progress
  - Extended Mode testing
    - Texas A&M commencing tests
  - Special Events- Houston Rodeo- Feb 25- March 20
    - Largest annual extended event in Houston supported by over 1000 of Public Safety personnel
    - Users planned include:
      - On and off-duty Law Enforcement
      - EMS
      - Fire Marshalls
    - Device acquisition, applications, and logistics in process

- Data Analytics:
  - Reports
    - System Dashboard
    - Mobility Dashboard
    - Accessibility and Retainability
    - Device throughput
    - Device Data Latency
    - Sector Interference
    - Handoff mapping and overshoot identification
  - Informal Key Lessons:
    - Network selection algorithms (between commercial and B14) can have dramatic impact on device performance
    - Unlicensed microwave spectrum can have congestion- Licensed microwave necessary for COWs during Rodeo
    - APN updates successfully pushed over-the-air to user devices

Texas (Harris Co.) Highlights

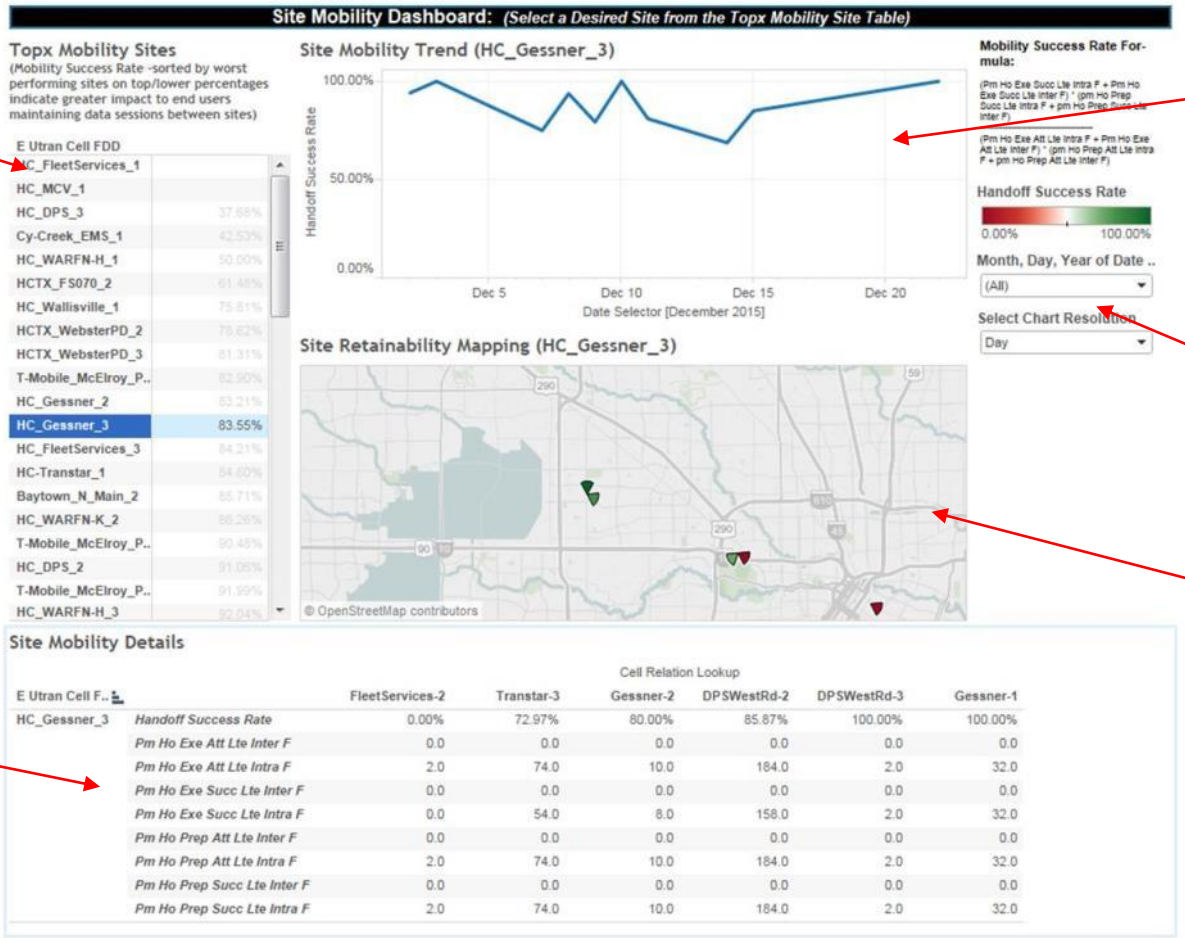
Quick look for problem sectors

Chronology shows trends and anomalies

Drill down to month, day, or hour

Handoff map shows overshoot or misalignments

Sector by sector stats



Harris County: Lessons Learned

- Other/Future Considerations:
  - Customer support systems
  - Supported device plan
  - Network Operations Center plans

Deployment Planning

Deployment Planning

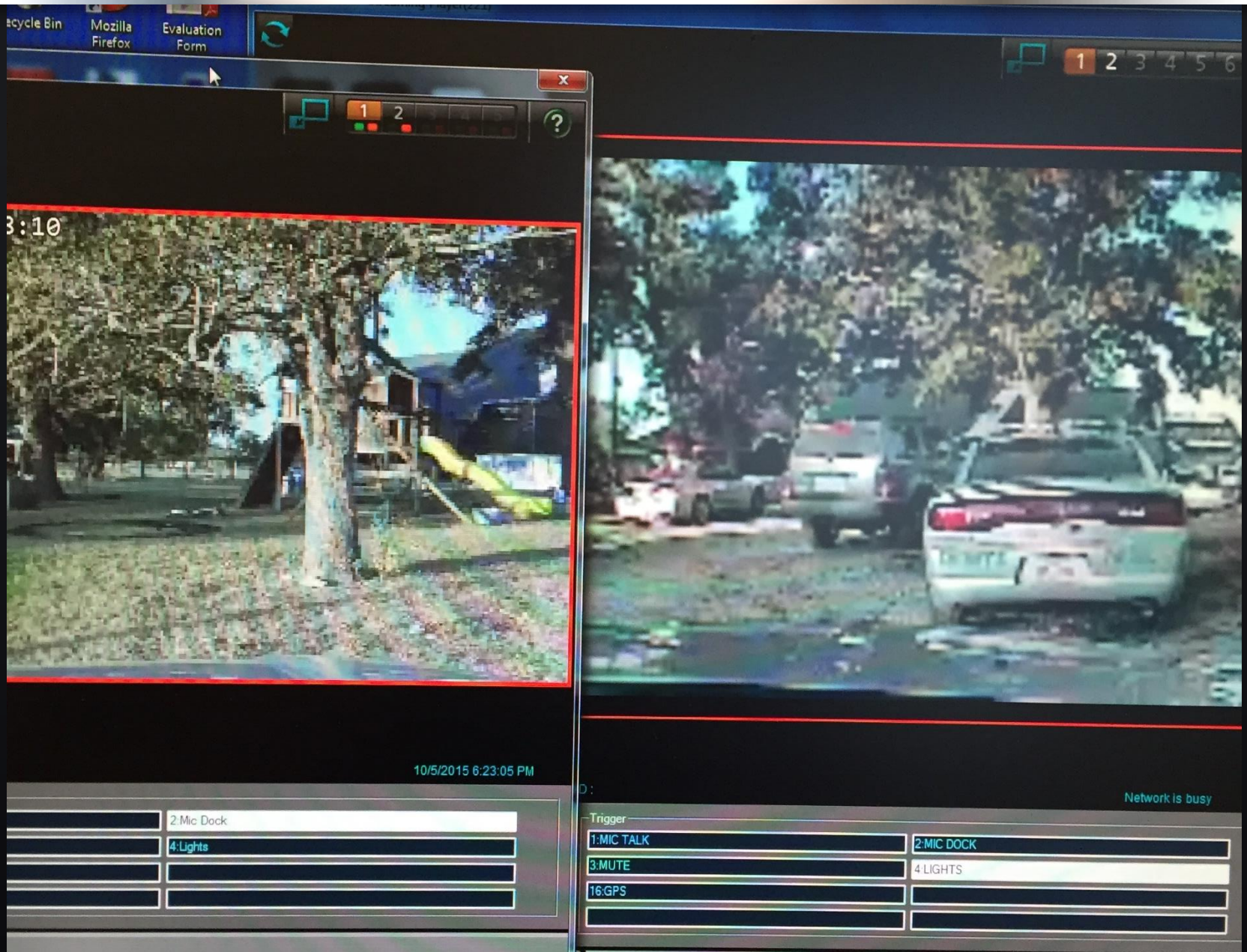
Incidents, Events, Exercises

- SXSW
- Austin City Limits
- Houston Livestock Show and Rodeo
- Super Bowl LI (2017 – Houston)
- Speedways
- Many Others…

Brazos County Sheriff's Office

- Test site for Harris County LTE
- 64 patrol units equipped with modems
- Band 14 is Primary data communications; Verizon is secondary

Brazos County: Armed Stand-off



FirstNet Board Meeting and Demo

FirstNet Board Meeting and Demo

FirstNet Board Meeting and Demo

Technology Demo - Assets

Off-Site

Transtar/EOC

Wi-Fi Connected

Outreach & Education

The Texas Perspective

74,681 Certified Law Enforcement Officers

Critical Infrastructure

On its own power grid
27 Petroleum refineries
649 Hospitals
18 Ports
12 Hydroelectric dams
21 Wind farms

61,737 EMTs and Paramedics

78,000 Firefighters

1,462 Jurisdictions

1,254 Miles of International Border

3 Tribal Nations

Outreach & Education

- 448 Stakeholder Meetings
- 4 Broadband Conferences
- 63,078 O&E Materials Distributed
- Exhibits/Presentations (local, regional, state and national conferences)

Texas Public Safety Broadband Program

Home | TxPSBP | The Network | FAQs | Newsroom | Contact

Why TxPSBP?

The State of Texas Public Safety Broadband Program's (TxPSBP) mission is to work in conjunction with FirstNet to plan a dedicated broadband network for public safety across Texas.

Read more »

Learn

- Take an Online Course
- What is public safety broadband?
- Who is FirstNet?
- What is TxPSBP?
- How is it funded?

Get Involved

- Data Collection
- Regional Planning Meetings
- Broadband Planning Teams
- Strategic Advisory Groups
- Upcoming Events

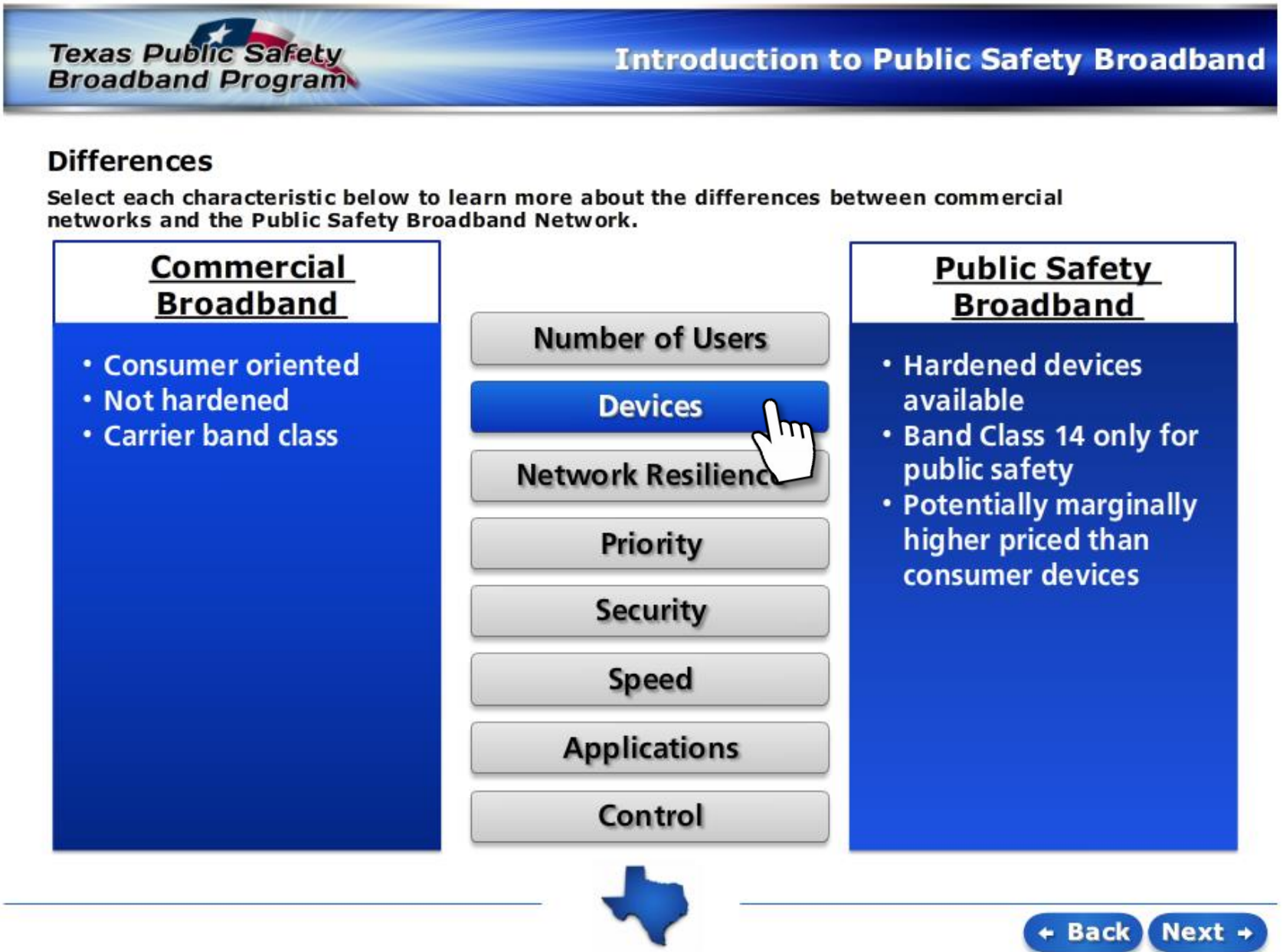
Vision

- Your Discipline
- Applications
- Benefits
- The Future

TxPSBP Online Learning Portal

Texas Public Safety Broadband Program

TxPSBP Online Learning Portal



Public Safety Broadband Network: Example Scenario

Pitcher Bridge Collapse

At 7:34am an international vessel, The Curie, struck the pylons of the Pitcher bridge. At the time of impact, 12 cars were on the bridge with 17 passengers, and 100 crew members were on the ship with 24 seriously injured.

The number of responding agencies grows as more information is discovered. Interoperable communications is key in saving lives and property.

Select the next button to review the communication efforts during this incident.

TxPSBP Online Learning Portal

Texas Public Safety Broadband Program

Introduction to Public Safety Broadband

Public Safety Broadband Network: Example Scenario

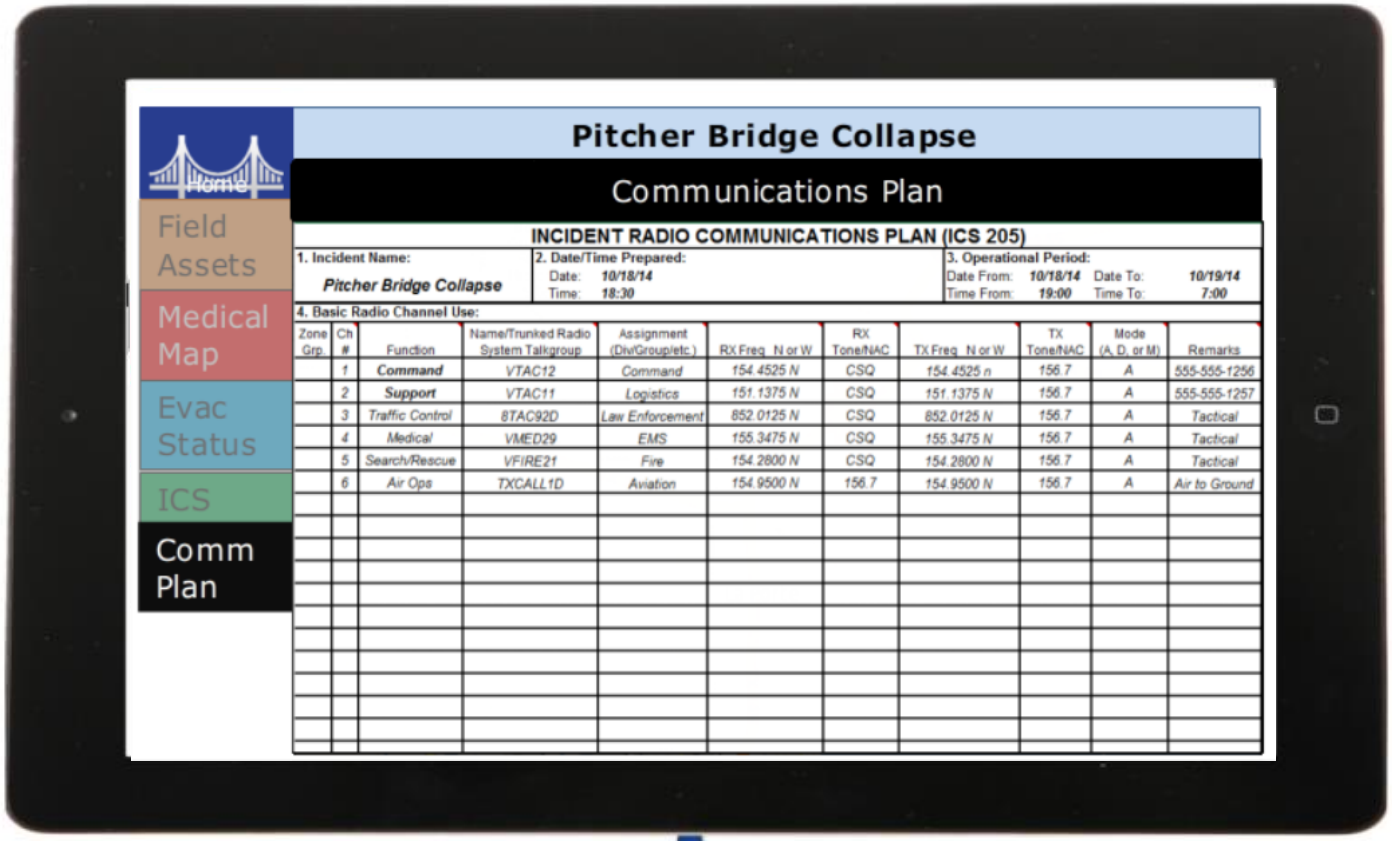
This network will open the door to the possibility of applications that are region-specific, or incident-specific. For this exercise, the application is incident specific to the bridge impact and subsequent collapse. This is only an example of the capabilities the Public Safety Broadband Network could open up.

TxPSBP Online Learning Portal

Texas Public Safety Broadband Program

Introduction to Public Safety Broadband

Public Safety Broadband Network: Example Scenario



INCIDENT RADIO COMMUNICATIONS PLAN (ICS 205)

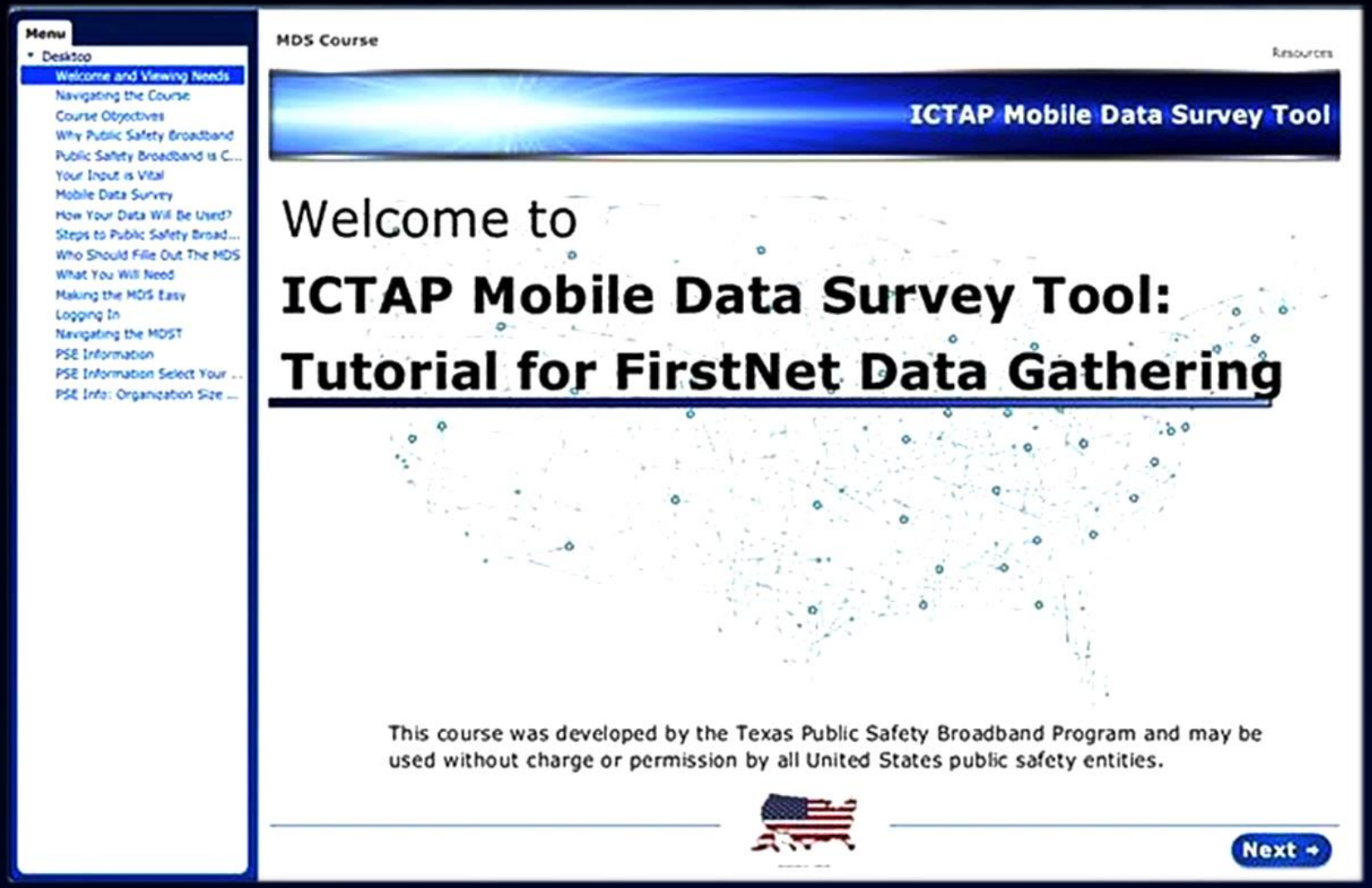
1. Incident Name:	2. Date/Time Prepared:	3. Operational Period:
Pitcher Bridge Collapse	Date: *10/18/14* Time: *18:30*	Date From: *10/18/14* Time From: *19:00* Date To: *10/19/14* Time To: *7:00*

4. Basic Radio Channel Use:

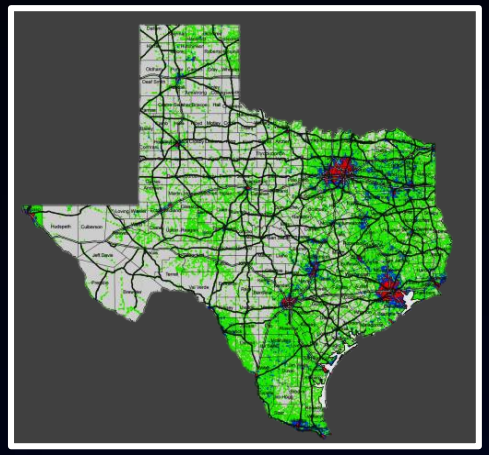
Zone Grp.	Ch #	Function	Name/Trunked Radio System Talkgroup	Assignment (Div/Group/etc.)	RX Freq N or W	RX Tone/NAC	TX Freq N or W	TX Tone/NAC	Mode (A, D, or M)	Remarks
	1	*Command*	VTAC12	Command	154.4525 N	CSQ	154.4525 n	156.7	A	555-555-1256
	2	*Support*	VTAC11	Logistics	151.1375 N	CSQ	151.1375 N	156.7	A	555-555-1257
	3	Traffic Control	8TAC92D	Law Enforcement	852.0125 N	CSQ	852.0125 N	156.7	A	Tactical
	4	Medical	VMED29	EMS	155.3475 N	CSQ	155.3475 N	156.7	A	Tactical
	5	Search/Rescue	VFIRE21	Fire	154.2800 N	CSQ	154.2800 N	156.7	A	Tactical
	6	Air Ops	TXCALL1D	Aviation	154.9500 N	156.7	154.9500 N	156.7	A	Air to Ground

Texas Data Collection

Free Online Tutorial – Used Nationwide



Coverage Planning: TX Coverage Objective



FirstNet Coverage Objective Baseline

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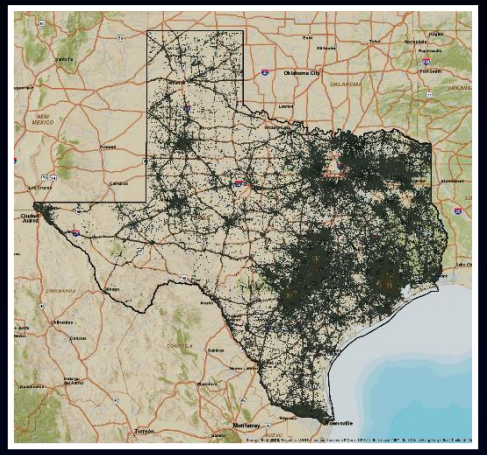

PSAP 911 call data

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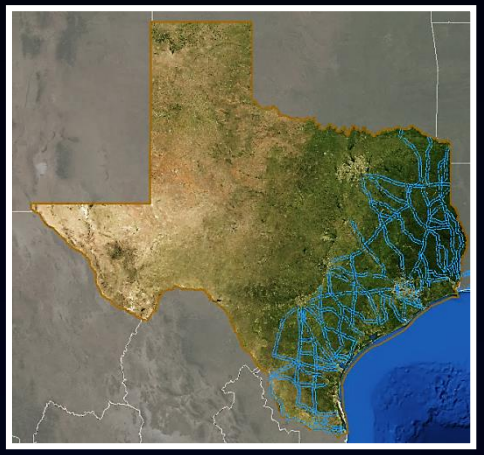

Hurricane evacuation routes

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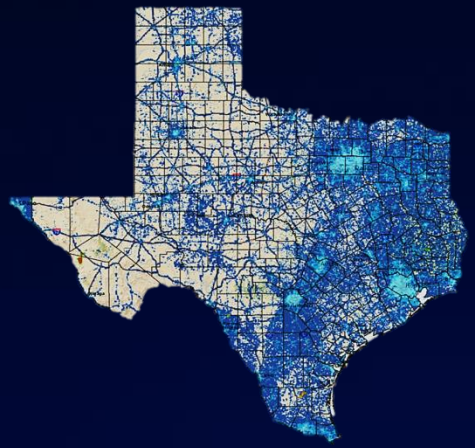
Texas Coverage Objective Baseline Q4 2015

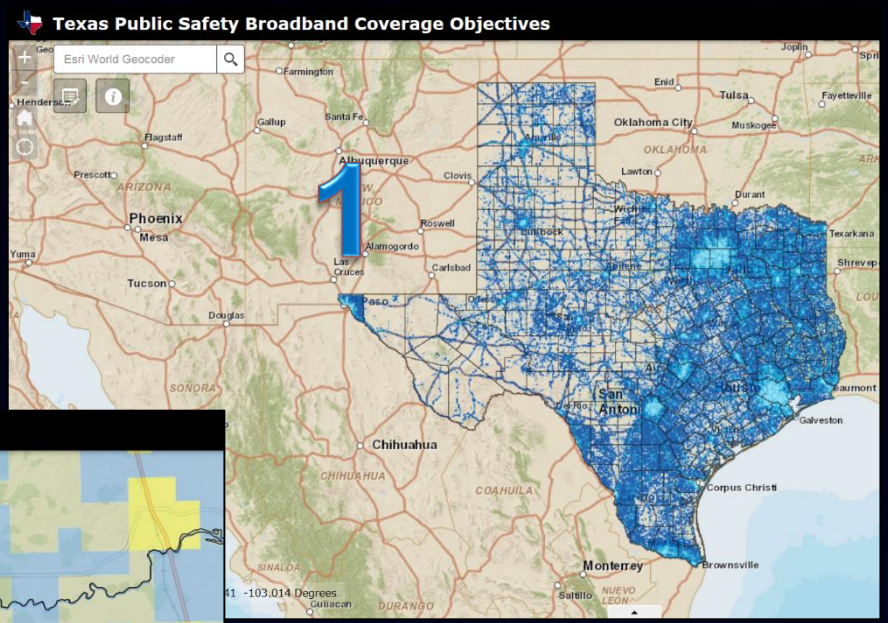


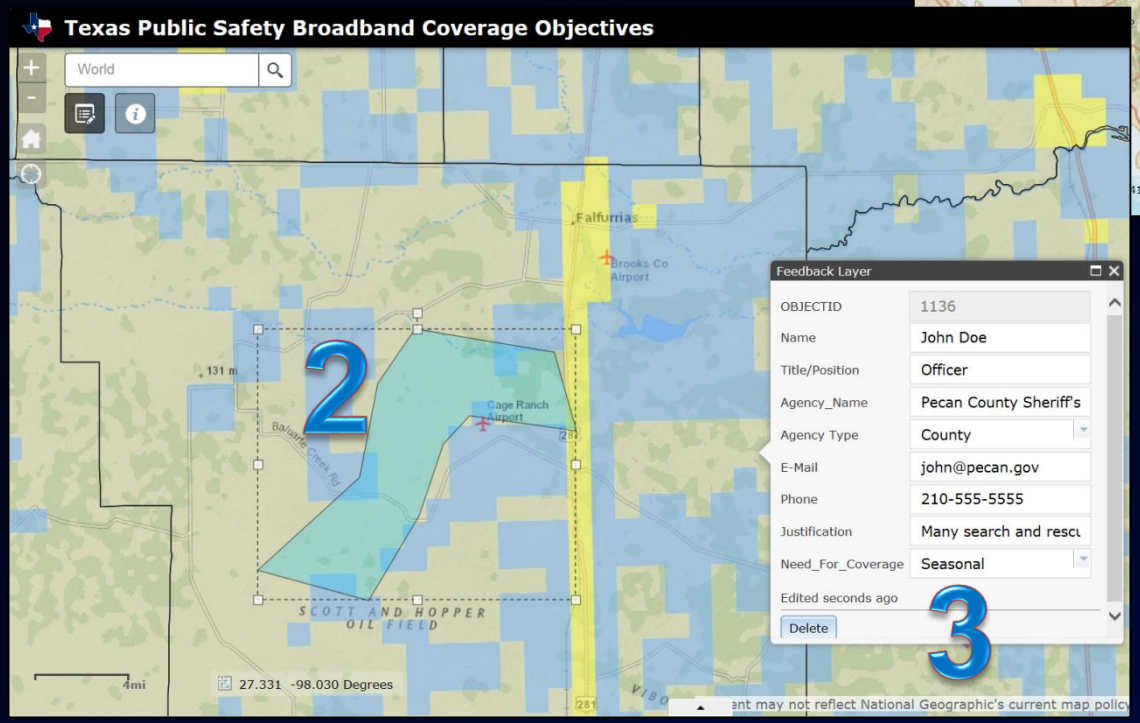
Standardized into FirstNet 1x1 mile grid

Identify preliminary gaps in FirstNet baseline

Coverage Planning: Feedback Tool

1 Interactive Texas coverage baseline released to Texas Councils of Government and first responder agencies Q4 2015





2 Identify remaining coverage needs at the local level

3 Incorporate first responder feedback
Q1 – Q2 2016

Coverage Planning: Phased Deployment Tool

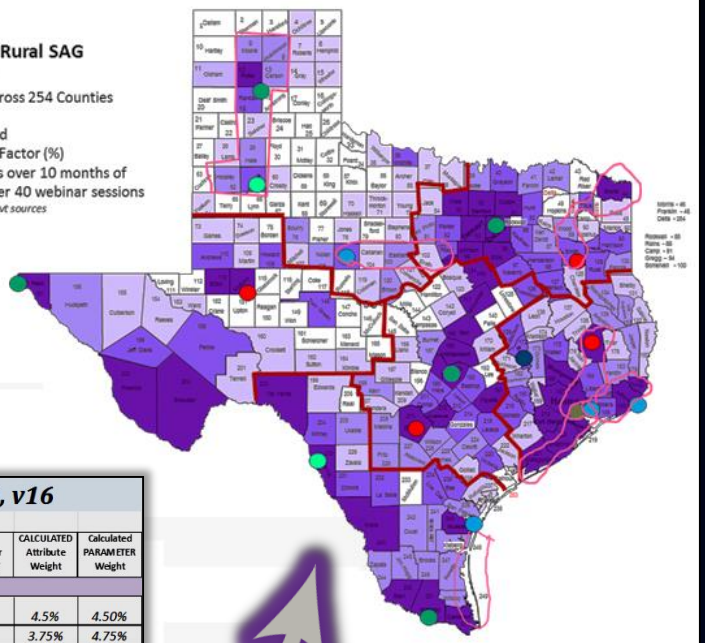
Objective decision-making tool, based on dozens of weighted datasets covering areas such as:

1. High risk temporary populations
2. Border risk areas
3. Pipeline risks
4. Tribal interests
5. Transportation
6. Natural hazards

PRELIMINARY Output from Rural SAG Ranking Tool, Sept 2015

- 42 Parameters* measured across 254 Counties
  - 10922 Data Items
- ~70% of Parameters Completed
- Each weighted by Importance Factor (%)
- Generated by group consensus over 10 months of work by Texas Rural SAG in over 40 webinar sessions

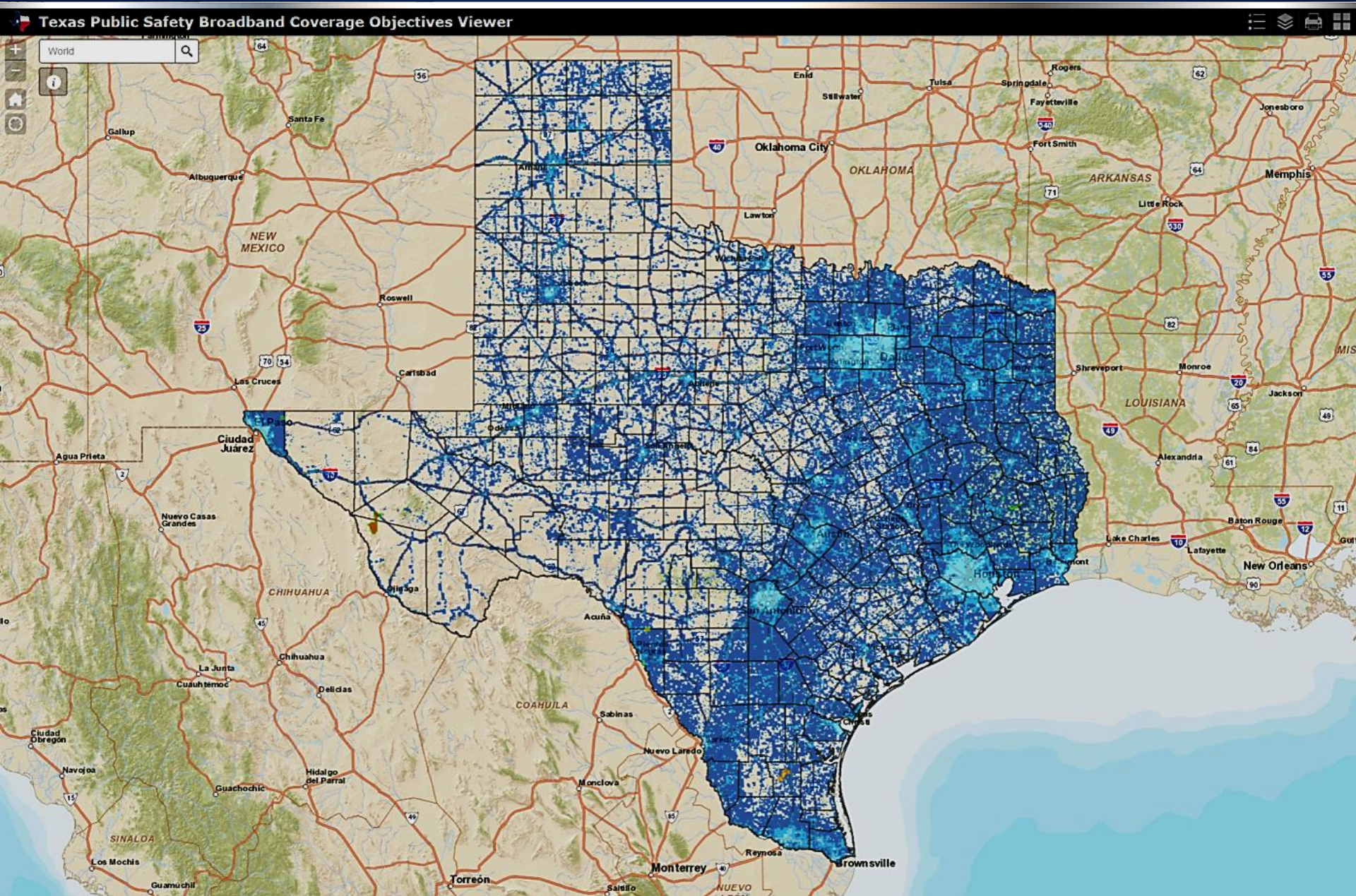
**Documented, Publicly Verifiable, mostly govt sources*



Texas Coverage Tool – County Level Needs MATRIX - v30, v16

CAT WEIGHT	Factors Req'd by PL 112-96 / Weighting Matrix, Public Safety NEED BY COUNTY	Current Rural SAG Consensus Baseline	Subfactor WEIGHT	CALCULATED Attribute Weight	Calculated PARAMETER Weight
		v30 - Version of TOOL, v16 - Version of CONTENT			
20%	**Key Priority Factors By County**				
	1-County Geographic Area incl Water	Square miles (land + water) - Updated to include WATER AREA	25%	4.5%	4.50%
	2-2014 Population by County	Residents by County - Updated to Projected 2014 US Census	25%	3.75%	4.75%
	2.1-Students - Public Early Ed - 12th Grade	Public Early Education Thru Grade 12 Students	5%	1.00%	
Fed Law	3-Tribal County Priority Factor	Kick-Maverick, YDSP- El Paso, A-C- Polk	30%	6.0%	6.00%
Fed Law	4-Texas Rural County Priority Factor	Density of more than 10 less than 100 persons/square mile (updated)	30%	6.0%	6.00%
10%	**Tribal Interests By County**	Josh Garcia (YDSP), Willo Sylestine (A-C), Steve Esquivel (kttt)	Weighting Factor		
	5- Counties of Texas Tribes (3)	Tribal lands in acres in Federal Trust Status	20%	2.0%	
	5.1 Tribal Interests Outside Counties of Texas Tribes	Counties with substantive Texas tribal interests outside El Paso, Maverick or Polk	10%	1.0%	
	6-Tribal Population Per County	*% of Total Texas Population of Tribal People who reside in each County, use US Census Bureau*		0.0%	3.5%
	6.1 K-12 American Indian & Alaska Native Students	Number of students in this Ethnicity category by county, 2014-15	35%	3.5%	
16%	**Borders & Ports By County**				
	Mexican Border Risk, Traffic Volume				7.20%
	7- Mexican Border Risk Areas	Estimated from combination of types of activities, number of occurances and amount of deployed surveillance	20%	3.2%	
	8 - Length of Mexican Border	Mexican border in linear miles by County	10%	1.6%	
	9- Annual Volume of People, Vehicles & Containers	Annual Volume of People, Vehicles & Containers	10%	1.6%	
	10- Number of Border Crossings and Interior Checkpoints	Number of Border Crossings and Interior Checkpoints by County	5%	0.8%	
	Sea Port Risk				4.80%
	11- Estimated Deep Sea Port Risk	Estimated from combination of types of cargo, tonnage of cargo and amount of International Cargo	25%	4.0%	
	12- Number of Sea Ports of Entry	Number of Sea Ports on Gulf Coast by County	5%	0.8%	
31%	**Critical Infrastructure by County**				
	14- Texas Military Assets	1) Texas Army National Guard, 2) Texas Air National Guard, 3) Texas State Guard; state heavily relies on these resources for Emergency and Disaster response	5%	1.6%	1.55%
	15- Water Infrastructure (Tx Dams)	Texas Dams - by Maximum Storage Capacity per County in Acre-Feet.	6%	1.9%	1.86%
	16- Critical Government Infrastructure	Gov't (Public Administration) "Establishments" by County	7%	2.2%	2.71%
	17- Prisons, Jails & Detention Centers	Percentage of (all) Prison Security Employees by County	1.75%	0.5%	
	18- Civil Aviation Infrastructure	Top 25 Airports, No. Enplanements Per Year (FAA), all civil air and private air trans	7%	2.2%	2.17%
	19- Nuclear Hazards (all)	Estimated based upon weighted combination of Nuclear-Related risks	5.5%	1.71%	1.71%
	20-PS Network & Comms Infrastructure	Number of Licensed PS Fixed Transmitters by County	8.00%	2.5%	2.48%
	21- Crime Offenses by County	Percentage of Crimes by County (2013 TxDPS Data)	15.00%	4.7%	4.65%

Coverage Mapping Tool



Initiatives

Texas Public Safety Broadband Program

Expand Strategic Advisory Groups (SAGs)

Tap into the creativity and knowledge of Texas stakeholders and ensure that everyone has a place to "plug in."

- First Responder Discipline-focused
- PSAP/NG911
- Education
- Rural
- Tribal
- CTT/QPP
- SEC
- VOAD/ Private Sector
- State Agency

For More Information…

www.TxLTE.com

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